Department of Human Services
State House, Augusta, Maine

Date: December 14, 2004

To: Catherine Cobb, Acting Bureau Director, BEAS

From: Steven R. Keaten, Health Care Financial Analyst

Subject: Preliminary Staff Assessment of A Proposal by Eastern Maine Medical Center to Develop a Combined Heat and Power (CHP) Co-generation Power Plant at its facility in Bangor, Maine at an estimated capital cost of $7,514,250.

The following preliminary staff assessment is based on the record established to date.

The record established to date is limited to information presented in the application and other materials submitted by the applicant, officially noticed facts and staff findings related to criteria the Department is required to address in making its decision regarding this proposal.

The preliminary staff assessment is based solely on the record to date and finds that the proposal be approved with two conditions as will be described herein.

SRK:

Project Summary

EMMC plans to develop a co-generation plant to supply the majority of EMMC's steam and electrical requirements. Co-generation would also provide additional chilled water capacity and provide the added advantage of reducing current boiler plant emissions. EMMC will not be operating the plant as a stand-alone system, or "islanding". EMMC will operate the plant in parallel with Bangor Hydro and will continue to purchase a small amount of power from Bangor Hydro. This arrangement will provide an additional back-up system. EMMC will continue to maintain its current stand-by generators. In this way, EMMC will have three available utility systems: on-site cogeneration plant; back-up generators on-site; and a back-up contract with Bangor Hydro for power.

In addition to reducing energy costs, EMMC's co-generation study has found that when operating in conjunction with the existing standby generators, EMMC could operate at full capacity during a major utility grid failure. The co-generation system would utilize a gas turbine equipped to operate on either natural gas or Number 2 fuel oil for increased reliability and for natural gas pricing considerations. The gas turbine would operate in parallel with Bangor Hydro for normal operation; however, it would have the ability to operate on a stand-alone basis during a utility failure.

PRINCIPLES GOVERNING THE REVIEW OF APPLICATIONS

A. That the applicant is fit, willing and able to provide the proposed services at the proper standard of care as demonstrated by, among other factors, whether the quality of any health care provided in the past by the applicant or a related party under the applicant's control meets industry standards**;**

EMMC is an acute care, non-profit community hospital that began operations in 1892. EMMC serves as the referral hospital for the region, which includes Penobscot, Piscataquis, Aroostook, Washington, Hancock, Knox, Kennebec, Somerset and Waldo Counties. EMMC is licensed for 411 acute care and 15 skilled nursing beds. EMMC offers a full range of inpatient and outpatient specialty services including cardiac, orthopedics, obstetrics, oncology, pediatrics, nephrology, rehabilitation, and med/surg services with an active medical staff of approximately 350 physicians.

In addition to acute care services, EMMC provides a wide range of ambulatory services. These include radiation therapy, emergency and urgent care services, oncology clinic, family practice, women's center, physical and occupational therapy, outpatient surgery, dialysis, and diabetic and nutrition counseling.

EMMC is a subsidiary of Eastern Maine Healthcare (EMH). Affiliated direct care organizations of EMH are Acadia Hospital Corp., Acadia Healthcare Inc., Affiliated Healthcare Systems, The Aroostook Medical Center, Bangor Area Visiting Nurses,

Hospice of Eastern Maine, C.A. Dean Memorial Hospital and Nursing Home, Inland Hospital, Rosscare and Sebasticook Valley Hospital. A strategic affiliate is Blue Hill Memorial Hospital.

EMMC provided the information extolling their ability to maintain and operate this power system. Oak Ridge National Lab the grantor required information be submitted on the following areas; Overall Technical Approach, Personnel Qualifications Corporate Experience, Past Performance and Project management approach and team capabilities. EMMC was one of a handful of awardees. It would seem the Oak Ridge team is satisfied with the expertise of EMMC staff.

The electrical system is one of the most sophisticated systems in the State of Maine due to strict NFPA (National Fire Protection Association) codes regulating Healthcare facilities and the need to have dependable power in case of internal or external problems. EMMC has operated a highly sophisticated power system for over thirty years.

The challenge will be the phase of the project to tie all of the electrical systems together and start testing to make sure all systems are working properly. EMMC expressed it is critical to keep the power on 100% of the time at a medical center. The tie-in phase will have to be well planned and coordinated to make sure all existing systems remain operational. This technology has been used at approximately 160+ other hospitals across the country.

As part of the project scope, part of the existing EMMC maintenance staff will undertake additional training to operate and perform some of the minor maintenance work for the turbine and related gear. The major maintenance work will be outsourced to the supplier of the turbine (Solar) via a yearly service contract. Some of the technicians that work for Solar live in the New England area and would be close if needed. It is important to note since this system will run in parallel with the utility, if it shuts down unexpectedly, there will be no loss of power to the medical center. The yearly service contract was part of the financial model of the project.

Certificate of Need contacted the Division of Licensing and Certification who acknowledges that Eastern Maine Medical Center is a fully licensed acute care hospital licensed in the State of Maine and is Medicaid and Medicare certified. Currently EMMC, as noted above, operates a highly sophisticated system, on the campus of EMMC which provides backup electrical power to their facilities. The addition of the proposed Co-Gen power plant, may have challenges, as noted above, but the current sophistication within the EMMC power plant with its inherent demands have been met without major incident by the current facilities plant management staff. EMMC staff assigned to this project is Jeffrey N. Mylen, State of Maine Professional Engineer #8084 (Electrical) Administrative Director of Facilities at Eastern Maine Medical Center

B. The economic feasibility of the proposed services is demonstrated in terms of:

1) Capacity of the applicant to support the project financially over its useful life, in light of the rates the applicant expects to be able to charge for the service to be provided by the project; and:

(2) Applicant's ability to establish and operate the project in accordance with existing and reasonably anticipated future changes in federal, state and local licensure and other applicable or potentially applicable rules.;

The following table summarizes the estimated capital cost of the proposed project: The total capital costs for this project are $7,514,250.

TABLE 1: PROPOSED CAPITAL EXPENDITURES BUDGET:

Power Plant construction	$2,472,364	(1)
Equipment (Generator) & Furnishings	4,652,203	(1)
Contingency (3.5% of construction)	86,683	
Architects and Engineering	30,000	(2)
Project Supervision	40,000	(2)
Legal Fees/Permits/Licensing Fees	30,000	(2)
CON Filing Fee	8,000	(3)
Gas & power negotiations	70,000	(2)
Information dissemination	125,000	(2)
Total Construction and Related	$7,514,250	

Notes:
(1) Includes equipment, site preparation and site work. Source: Vanderweil Engineers, Inc.
(2) Source: Cianbro

TABLE 2: SOURCES/USES of FUNDS

Sources	
Drawdown on EMMC's available revolving line of credit (1)	$ 4,381,250
EMMC Equity - CON fee plus dissemination costs	133,000
ORNL subcontract award	3,000,000
Total Sources	**$ 7,514,250**
Uses	
Construction and Related Costs	$ 2,729,047
Other CON fee plus dissemination	133,000
Equipment and Furnishings	4,652,203
Total Uses	**$ 7,514,250**

Notes: (1) EMMC will utilize short term bank financing for the CHP Project due to the short payback period (< 3 years) of the project.

EMMC is contributing $133,000 in equity to this project. It appears based on their submitted audited financial statements that they could fully fund the project without borrowing. Due to the low cost of borrowing, because of low interest rates, it is acceptable that the project proceed as submitted. The applicant would probably earn a better rate of return on investments with any additional equity that the CON unit might otherwise require.

The audited combined financial statements of Eastern Maine Healthcare Systems that were submitted for the FYE 02 and 03 show income from operations of $4,157,246 and $5,827,173 respectfully. This shows that the applicant can support the project financially. In addition the applicant shows a cost savings of $658,389 by the 3rd full year of operation. (See Table below.) Originally the applicant showed a cost savings of $1,953,602 by the 3rd full year of operation. The amount was adjusted downward after a public hearing was held to adjust for the higher cost of fuel and efficiency of the proposed equipment. Bangor Hydro Electric Company, which opposes the project, estimates a loss for the proposal of approximately. $500,000 annually.

EASTERN MAINE MEDICAL CENTER

TABLE 3: REVISED: FINANCIAL PRO FORMA
NET CASH FLOW BENEFIT FROM UTILIZATION OF CHP CO-GEN UTILITY PLANT
September 13, 2004

	FY2006	FY2007	FY2008	FY2009	FY2010	
Conventional						
Electric Costs	$ 2,935,299	$ 2,755,016	$ 2,749,214	$ 2,741,023	$ 2,746,516	(1)
Steam Costs	$ 1,172,785	$ 1,172,785	$ 1,172,785	$ 1,172,785	$ 1,172,785	(1)
Total Existing Energy Costs	**$ 4,108,084**	**$ 3,927,801**	**$ 3,921,999**	**$ 3,913,807**	**$ 3,919,301**	(1)
w/Cogeneration Plant						
Bangor Hydro	$ 228,599	$ 223,403	$ 223,236	$ 223,000	$ 223,158	(2)
Co-Gen Fuel Costs	$ 2,444,338	$ 2,444,338	$ 2,444,338	$ 2,444,338	$ 2,444,338	(3)
Co-Gen Maintenance Costs	$ 270,000	$ 270,000	$ 270,000	$ 270,000	$ 270,000	(1)
Total Energy Costs with Co-Gen	**$ 2,942,937**	**$ 2,937,741**	**$ 2,937,574**	**$ 2,937,338**	**$ 2,937,496**	
Total Savings	**$ 1,165,147**	**$ 990,060**	**$ 984,425**	**$ 976,469**	**$ 981,805**	(4)
Principal & Interest	$ (326,036)	$ (326,036)	$ (326,036)	$ (326,036)	$ (326,036)	
Net Cash Flow	**$ 839,111**	**$ 664,024**	**$ 658,389**	**$ 650,433**	**$ 655,769**	

NPV = $ 4,977,657

Simple Payback = 3.51 years
Project Costs = $ 3,625,000

Notes:
(1) Source: Vanderweil Engineers, Sept. 13, 2004
(2) Includes 5.87% of electricity demand and standby costs
(3) Natural gas and liquid fuel
(4) Savings will be applied to a future CON application to enhance EMMC's regional ICU capacity

The Certificate of Need Unit staff has determined the applicant's proposal meets the requirements of this criterion. EMMC projects a cost savings of $658,389 by the 3rd full year of operation. BHE assess this project to increase operating costs by $500,000 per year due to the their projected future fuel (gas and oil) costs as compared to EMMC. Also, some discussion

was raised in that the co-generation plant may produce a higher power output due to the need to maintain peak efficiency resulting in a production of more power than what is needed during off-peak hours. One cannot truly anticipate future energy costs. CONU concludes that any costs associated with this project would have been borne by EMMC even while maintaining its current power structure through increased fuel costs passed along by EMMC's current electric power supplier.

The grant provided to EMMC to develop this co-generation power requires specific reporting on the cost-effectiveness of this endeavor. The Certificate of Need Unit will propose **two conditions** to the Commissioner's approval letter: 1) that the applicant will provided annually for three years, starting with the first full year of operation, the total annual costs of providing power to the hospital under this project as compared to the costs that would have been paid to Bangor Hydro Electric for the same service. In the event that these annual costs exceed that of what Bangor Hydro Electric would have charged for the same service then the excess costs will not be allowable. The reporting format will be the same as provided in Table 3 of EMMC's application "Financial Pro Forma Net Cash Flow Benefit From Utilization of CHP Co-Gen Utility Plant"; 2) all documentation compiled on the data schedule and required by the grantor-Oak Ridge-will also be relayed to the Certificate of Need Unit.

C. There is a public need for the proposed services as demonstrated by certain factors, including, but not limited to:

(1) Whether, and the extent to which, the project will substantially address specific health problems, as measured by health needs in the area to be served by the project;

(2) Whether the project will have a positive impact on the health status indicators of the population to be served;

(3) Whether the services affected by the project will be accessible to all residents of the area proposed to be served; and

(4) Whether the project will provide demonstrable improvements in quality and outcome measures applicable to the services proposed in the project.

For several years, EMMC has been exploring options for lower cost energy. In February of 2001, Vanderweil Engineers, based in Boston, completed a cogeneration feasibility study as part of a Power Supply Evaluation for EMMC. This study was updated in August 2003 and reinforced the potential savings and reliability of developing a combined heat and power plant to meet EMMC's steam and electrical requirements.

Co-generation technology is being used at hospitals throughout the U.S. and is recognized as being effective. The common denominator preventing an expansion of this technology is the initial up front costs. In this instance the Oak Ridge grant is a substantial amount of funding allowing EMMC to move forward.

Currently, EMMC's stand-by generators are only able to operate at one-quarter to one-third capacity during regional power outages. CONU research showed that throughout the country concerns about terrorist attacks on public utility systems and recent seasonal large-scale failures of regional power grids a possibility of a significant limitation to EMMC's capacity to provide services in emergency situations unless additional back-up power options are brought on-line exists.

EMMC plans to develop the co-generation facility through a contract with Cianbro as the general contractor. Vanderweil Engineers will be engaged to complete design and engineering services.

In February, 2004, Eastern Maine Medical Center applied for a competitive contract with the Oak Ridge National Laboratory (ORNL) in Tennessee for a Department of Energy funded project which sought to support innovative implementation of combined heat and power (CHP) projects, particularly targeted to health care and educational institutions. In May 2004, EMMC was informed that the EMMC CHP project had been selected to receive $3 million over three years to assist in funding the project. The press release of this award has not been publicized at this time, but this contract funding is included in the Sources and Uses table in this CON application.

The timeline below includes summary dates and was developed by EMMC staff, working with Cianbro and Vanderweil:

- CON filed June, 2004
- CON decision 90 Days (August/ Sept.)
- Design / Engineering concept work December, 2004
- Order and procure Solar CHP package February, 2005
- Construction complete October, 2005
- Start-up and commissioning
  October, 2005

EMMC is well situated to implement this project. The location of the new power plant will be one-quarter mile from the Bangor Natural Gas pipeline on the lower end of EMMC's campus. The generator will be located in an extension of the campus maintenance building along with existing utility equipment.

EMMC is a candidate for this type of non-variable steam load system because of EMMC's continuous use of power for a physical plant that is operational 24 hours-a-day, seven days a week.

The power generation system EMMC will be implementing is 99.9% reliable with no anticipated down time. Replacement units are noted to be easily installed. During maintenance periods Bangor Hydro would supply back-up power.

EMMC is the tertiary referral center for central, northern and eastern Maine. The population of this region is approximately 505,000.

Any increased demand for power from expansion of services or implementation of new technology require the addition of additional capacity. Additional utility power is needed to service their new medical office building on EMMC's campus. The Vanderweil engineering feasibility study assumed 2% inflation each year for utility demands. The cogeneration system would also provide additional steam capacity needed to serve the new Webber III medical office building on the EMMC campus as well as maintaining an excellent reliability factor.

Cogeneration is noted to be a viable option for reducing energy costs while providing a reliable source of clean electrical power. EMMC states; "when operating in conjunction with the existing standby generators EMMC could operate at full capacity during a major failure of the power grid. Current emergency power systems are only able to supply 25-33% of normal power during regional power grid failure".

The proposed project includes the installation of an absorption chiller. Utilization of an absorption chiller has three major advantages:

- Balance of the yearly steam demand
- Reduce the summer peak electrical demand
- Provide 500 tons of new chilled water capacity.

The proposed cogeneration system will supply approximately 94% of EMMC's electrical requirements and approximately 60% of the steam requirements. turbine EMMC projects no new staff will be required to implement this project.

EMMC states in its application the following: "without implementation of the co-generation plant EMMC would have to add additional capacity in the short term. The significant cost savings associated with this project would be lost".

Over 500,000 residents rely upon EMMC as a regional referral health care facility. It is imperative the EMMC's services are available at all times which requires a reliable, clean, cost-effective energy source. The facility infrastructure is assumed to have the capacity for clinical and related support services; this project is the next step in innovative energy assurance technology.

Bureau of Health assessment forwarded by Dora Mills, M.D. Director, Bureau of Health to William Perfetto dated July 21, 2004 states the following:

> "It is my determination the Eastern Maine Medical Center's application for a co-generation utility plant will not have a significant negative or positive health care impact."

The Certificate of Need staff concurs with the Bureau of Health assessment that this proposed project will not have a significant negative health care impact. It will however have a positive health care impact in that a public health need is the assurance of continuous power especially since EMMC is the tertiary referral center for central, northern and eastern Maine. This is important given that medical equipment is sophisticated and computerized needing a constant power source.

D. That the proposed services are consistent with the orderly and economic development of health facilities and health resources for the State as demonstrated by:

(1) The impact of the project on total health care expenditures after taking into account, to the extent practical, both costs and benefits of the project and the competing demands in the local service area and statewide for available health care resources;

(2) The availability of state funds to cover any increases in state costs associated with utilization of the project's services; and

(3) The likelihood that more effective and accessible, or less costly, alternative technologies or methods of service delivery may become available.

In making a determination under this subsection, the Commissioner shall use data available in the State health plan under section 253, data from the Maine Health Data Organization established in chapter 1683 and other information available to the Commissioner. Particular weight must be given to information that indicates that the proposed health services are innovations in high quality health care delivery, that the proposed health services are not reasonably available in the proposed area and that the facility proposing the new health services is designed to provide excellent quality health care.

William A. Bremer, Bureau of Insurance assessment memorandum to William Perfetto dated July 29, 2004, states the following:

"Based on my review of the application and supplemental information submitted by Eastern Maine Medical Center, it is my determination that this project will not have an impact on the cost of health insurance in Maine on either a regional or statewide basis."

The Certificate of Need Unit supports the assessment by Mr. Bremer this project will not pose a financial impact to third party payors.

The proposal does not involve the addition of new services or equipment. Maine Health Data Organization was not contacted during this review.

In addition, staff from the Public Utilities Commission projected minimal impact to other hospitals in the Bangor-Hydro service area if costs are passed on to the other healthcare providers. Staff from the PUC estimated an increase in costs to the other six hospitals in the Bangor Hydro service area to be only $3,764 per year for 2005, 2006 and 2007. This minimal cost would not adversely affect health care expenditures in the region. Certificate of Need Unit review limited its impact analysis to only Health Care Providers.

E. Is Consistent with the State Health Plan

Certificate of Need has evaluated this proposal to the criteria set forth in the State Health Plan. Our conclusion notes that this project addresses the first tier priority-Projects with the primary objective of eliminating threats to patient safety and projects that demonstrate best practices in building operation.

F. Ensures high-quality outcomes and does not negatively affect the quality of care delivered by existing service providers;

Certificate of Need Unit concludes that the availability of consistent power level will ensure quality outcomes and clearly will be a positive impact to the care delivered at EMMC. The small increase of $3,764 to the six other hospitals in Bangor Hydro service area will not affect the quality of care delivered by existing service providers.

G. Does not result in inappropriate increases in service utilization, according to the principles of evidence-based medicine adopted by the Maine Quality Forum, as established in Title 24-A, section 6951;

Certificate of Need Unit concludes this power plant project is not subject to these principles which have not been created.

H. Can be funded within the Capital Investment Fund. 22 M.R.S.A. Sec. 335 (7).

This project is exempt from the Capital Investment Fund.